

# NANOCHEM® H/HP-Series Gas Purifiers

## Features and Benefits

- Purification for all ultra-high purity applications
- **Highest Lifetimes**
- **Best Impurity Removal Efficiencies**
  - Removes critical contaminants to sub parts-per-billion level (< 0.1 ppb in inert gases)
- **End-Point Detection available (H-Series)**
- Enhances manufacturing process economy and improves equipment performance
- Provides consistently high purity gas under fluctuating inlet impurity conditions
- Improves component lifetime and reduces particle generation by removing moisture and volatile metals from corrosive gases
- No moving parts or power requirements
- Easy to operate
- Built-in 1-valve bypass
- Does not require heating or cooling
- Low overall cost of ownership
- Media refills available for all sizes
- Inlet and outlet springless diaphragm valves

## Specifications

- All metal parts, Type 316L stainless steel, nickel and Elgiloy® valve diaphragm
- 0.003  $\mu\text{m}$  particle filter with 99.999999% retention (PTFE or 316L SS)
- Internal surface finish < 15  $\mu\text{in}$   $R_a$
- H-Series: Maximum allowable working pressure of 150 psig (1.13 MPa) with the fiber optic end-point detector or 500 psig (3.5 MPa) without detector
- HP-Series: Maximum allowable working pressure of 2850 psig (19.7 MPa)
- Maximum operating temperature of 70°C

## Connections

- Female inlet and male outlet 1/4 inch VCR®-compatible face seal fittings

## Options

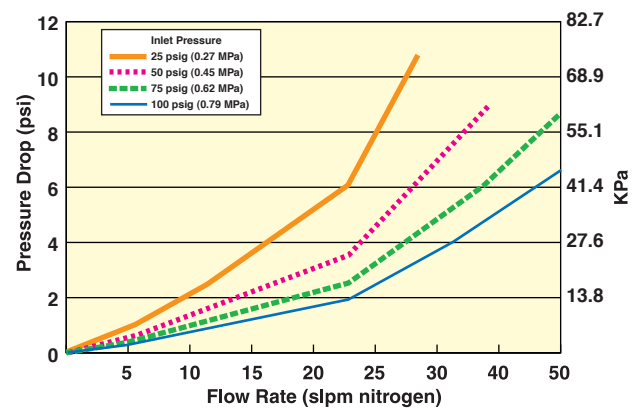
- Fiber optic end-point detector indicates when it is time to replace the purifier (for non-corrosive gases only)
- Pneumatically-actuated diaphragm valves
- Manually or pneumatically-actuated bellows valves

## Description

The NANOCHEM® H/HP-Series Purifiers provide economical gas purification in multi-tool or single-source applications.

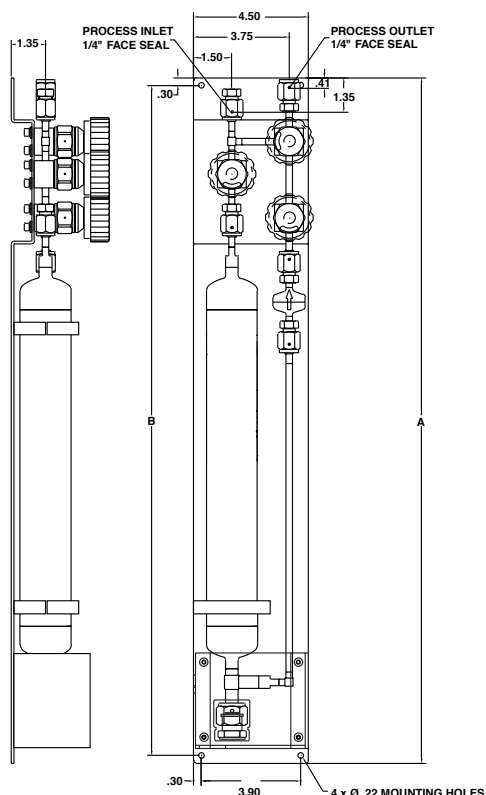
With a welded bypass valve incorporated in the purifier unit, H/HP-Series purifiers are often used in gas enclosures, both source and purge gas, where space is limited. Its low width makes it ideal for installation in restricted space or gas jungle applications where multiple vertical gas lines are being run.

Purification media refills are available through MATHESON.



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### Operating Pressure and Flow Rates

	H-500	HP-500
Maximum allowable working pressure, psig	500	2850
MPa	3.5	19.7
Maximum recommended flow rate slpm, N <sub>2</sub>	50	50
NM <sup>3</sup> /hr, N <sub>2</sub>	3	3

### Dimensions inches (mm)

H/HP-Series Purifier	H/HP-500	HP-300
A	26.90 (683.26)	21.09 (535.68)
B	26.30	20.49

Gas Type	Impurities Removed
Nitrogen (N <sub>2</sub> ), Argon (Ar), other inerts	< 0.1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 1 ppb CO* < 0.1 ppb NMHC (with OMX-Plus™) LDL NO <sub>x</sub> , SO <sub>x</sub> , H <sub>2</sub> S
Ammonia (NH <sub>3</sub> )	< 0.1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> in inert gas LDL < 1 ppb CO* < 45 ppb H <sub>2</sub> O in ammonia LDL NH <sub>3</sub> -CO <sub>2</sub> complexes, SiH <sub>4</sub> , Siloxanes, GeH <sub>4</sub> , H <sub>2</sub> S
Silane (SiH <sub>4</sub> )	< 0.1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 1 ppb CO* Chlorosilanes, disilane, siloxanes, arsine, phosphine
Arsine (AsH <sub>3</sub> ), Phosphine (PH <sub>3</sub> )	< 0.1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 45 ppb H <sub>2</sub> O in phosphine LDL < 75 ppb H <sub>2</sub> O in arsine LDL CO, oxyacids (H <sub>3</sub> AsO <sub>4</sub> , H <sub>3</sub> P <sub>4</sub> O <sub>7</sub> )
Hydrogen (H <sub>2</sub> ), Methane (CH <sub>4</sub> ), Ethane (C <sub>2</sub> H <sub>6</sub> ), other HC	< 0.1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> LDL < 1 ppb CO* NO <sub>x</sub> , SO <sub>x</sub> , H <sub>2</sub> S
Sulfur Hexafluoride (SF <sub>6</sub> ), Carbon Tetrafluoride (CF <sub>4</sub> ), other fluorocarbons	< 0.1 ppb H <sub>2</sub> O, O <sub>2</sub> , CO <sub>2</sub> in inert gas LDL < 10 ppb O <sub>2</sub> , H <sub>2</sub> O in sulfur hexafluoride LDL
Oxygen (O <sub>2</sub> ), Carbon Dioxide (CO <sub>2</sub> ), Nitrous Oxide (N <sub>2</sub> O)	< 10 ppb H <sub>2</sub> O
Carbon Monoxide (CO)	Metal Carbonyls: Fe, Ni
Corrosives (HCl, HBr, Cl <sub>2</sub> , SiH <sub>2</sub> Cl <sub>2</sub> , SiHCl <sub>3</sub> , BCl <sub>3</sub> )	< 1 ppb H <sub>2</sub> O in inert gas < 100 ppb H <sub>2</sub> O in HBr LDL < 150 ppb H <sub>2</sub> O in HCl Volatile Metals: Fe, Mo, Cr, Ni, Mn, Ti

LDL – Lower Detection Limit by State-of-the-Art Analytical Instrumentation

NMHC – Non-methane Hydrocarbons

\*NOTE: CO is removed efficiently by OMX & OMX-Plus™ media at low flow rates (recommend 1/10 of normal flow rate)

For a detailed list of purification media and impurities removed, refer to the Purification Media Table in NANOCHEM® Purification Solutions Brochure.

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Printed in USA PB030 R06/10



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